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A Bumpy ROAD:

PRINCIPAL AS Technology Leader

BY DOREEN GOSMIRE AND MARILYN L. GRADY

Many of us have experienced buying a new car or a “new to you” car. We are very protective of our investment. During the past three decades, the financial investment of owning a car has risen by 300%. This causes us to be cautious about maintenance and in whose hands we place the keys. Technology expenditures and usage in schools have also risen by nearly 300% during the last three decades. Beyond being accountable for these significant expenditures, however, what actions should principals take to ensure that technology is successfully implemented?

Few principals claim to be technology experts. Most aspire to design a map that leads their schools to success with educational technology. The key to success on the journey is not to know everything, but to ask the right questions. Answering the following 10 questions will help principals lead others to technology success.

1. What are the technology trends I need to know about? The 1990s were a boon for the technology industry. Every month there was a new cutting-edge technology to consider. Although the dot-com bust slowed things down (Vail, 2005), there are important technology trends for schools: mobile technologies, virtual learning, and data systems (Johnson, 2004; Pruitt, 2005; Vail).

Mobile technologies—such as laptops, handhelds (e.g., PDAs), and cell phones—are portable and can connect to the Internet. Many students have access to these devices because of their portability and price tag. Several schools are working toward creating a one-to-one computer-to-student ratio with these devices (Johnson, 2004; Mason, 2005; Vail, 2005). For portables to be used effectively, schools must have wireless networks.

There are stories of these devices being used by students to cheat on tests, disrupt classes, and even cause potential harm to one another, and after hearing such stories, most principals want to ban such devices, but that reaction may damage the school’s relationship with parents and students. Johnson (2004) suggests that schools need to learn to use these technologies to enhance educational experiences, not ignore or ban them. The current generation of students is not willing to leave their virtual lives at the school door.

PREVIEW

As technology use and costs have soared, school leaders have more pressure to manage and monitor the investment.

Principals don’t have to be technology experts to lead their school toward effective technology use, but they do need to be informed.

Asking these 10 questions can help principals stay on top of trends, research, and policy.

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Virtual learning opportunities have exploded. A national survey of school districts conducted by the U.S. Department of Education (Setzer & Lewis, 2005) estimated that 328,000 public school students are enrolled in online or video-based distance education courses. Virtual learning opportunities are available for all preK–12 students in various online and distance formats, both internationally and nationally.

Cutting-edge technologies include cybervideo that links video lessons to students anywhere in full-motion video and brain implants that allow individuals to command a computer by simply thinking are available for students with disabilities (Vail, 2005). Chris Dede, a professor at Harvard, developed multi-user virtual environments (MUVes), which provide simulators for students to move through a virtual simulated experience as a team or individually. Dede thinks that MUVes will reach students who do not perform well in the classroom (Pruitt, 2005).

Data management systems have become an essential tool to enable educators to use data to improve education and meet the demands of the No Child Left Behind Act. Student, parent, and teacher portals allow on-demand access to information for various reasons: for example, a parent wants to find out his or her child's current grade and assignment in a specific class, a student needs to download class notes, or a teacher wants to find out how an individual student performed on a specific content standard on the statewide exam. All of these tasks are accomplished with data management systems that interface with Web-based applications to allow different users to access information that is meaningful to them.

2. What does the research say about schools and technology? The body of research in educational technology is narrow compared with other knowledge bases in education. This is a field of emerging research—and the verdict is still out on all fronts, but two main research arenas are prevalent: student achievement and educational technology and digital equity.

Student achievement and technology is an urgent and compelling issue. This is especially true because of the national emphasis on standards-based accountability and the substantial investment of financial and human resources in purchasing and implementing technology. Several authors have concluded that technology has not yielded the anticipated student achievement outcomes (Whitehead, Jensen, & Bos-

chee, 2003). Others have concluded that the relationship between technology and student achievement is too complex to show a correlative relationship. Evidence does exist, however, to show that teachers are changing instruction, students are more engaged, and students have a more positive attitude toward learning when technology is present in the classroom (Protheroe, 2005).

Digital equity and the digital divide are prominent in the research literature. In the 1990s, researchers documented disparity between the number of computers and Internet access in low-income schools and in high-income schools. Recent authors cite the lack of equitable access to home computers, broadband Internet, sophisticated software, and teachers who effectively integrate technology (Warschauer, Knobel, & Stone, 2004).

3. What do I need to know about technology to move my school forward? Hope and Stakenas (1999) suggested three primary roles for the principal as technology leader: role model, instructional leader, and visionary. Principals must be “knowledgeable enough” about specific technology tools—such as e-mail, databases, the Internet, word processing, and simple spreadsheets—to model the use of technology for administrative and managerial tasks. Principals who make technology a routine part of their jobs illustrate a commitment to it and can personally help others acquire technology expertise (Brockmeier, Sermon, & Hope, 2005). Principals' technology skills should involve learning how to operate technology and using it whenever possible for carrying out their own duties, especially when communicating with others.

As instructional leaders, principals are responsible for facilitating teachers' integration of technology into the teaching and learning process. Principals need general knowledge about hardware capabilities and how software applications can be applied to instruction (Brockmeier, Sermon, & Hope, 2005). Anderson and Dexter (2005) reported that the success of implementing technology in the teaching and learning process is seriously threatened unless a key administrator becomes actively involved.

It is the principal's role to establish a vision for the school. Principals must establish a context for technology in the school and understand how the technology can be used to restructure learning, empower teachers, and help students become more technology literate (Brockmeier, Sermon, & Hope, 2005).

4. Are there guidelines to help me? The National Educational Technology Standards for School Administrators (NETS-A) were developed through a broad-based input process of practitioners and experts. NETS-A provides a framework for what principals need to know and do to provide effective technology leadership (International Society for Technology in Education, 2002). The NETS-A standards include six sections: leadership and vision; learning and teaching; productivity and professional practice; support, management, and operations; assessment and education; and social, legal, and ethical issues.

Having a technology committee, creating a technology plan, and conducting audits are other key practices. Every school needs a technology committee composed of parents, teachers, students, and technology staff members. The principal must empower that committee to function as a team to develop a technology plan that guides the acquisition and implementation of technology. Many states require schools to submit a technology plan that follows specific guidelines and standards to the state education agency. The committee sets the tone and establishes the framework for the technology plan.

The technology plan should also include internal and external audits. Internal audits identify what is happening in the school. External audits provide an outside look at how the school matches up to other schools and assesses the security of the technology infrastructure.

5. How do I construct a safety net for technology in the school? Widespread technology misuse and abuse is constantly in the media. Principals are responsible for creating and maintaining a cyber-safe environment for the school. Three practices provide a strong safety net: external audits, a sound acceptable use policy (AUP), and training as well as setting expectations for users to be good digital citizens.

A good external security audit analyzes risks, identifies vulnerabilities, and suggests remedies. An audit should evaluate security policies and processes, privacy policies, privacy data handling, security controls, technology infrastructure, physical site security, authentication systems, Internet vulnerability assessment, policies and controls for wireless deployment, and unauthorized access points (LaFee, 2005). State education agencies can offer suggestions for external audits.

AUPs are essential. Conn and Zirkel (2000) recommend five components for an AUP:

- The expectation that the school computing facilities will be used exclusively for educational purposes

- The expectation that students and teachers will use educationally appropriate speech and expressions when using technology
- The users' responsibility to follow copyright laws
- The users' rights to define privacy or lack of privacy in any and all use of school technology resources
- The users' responsibility to avoid substantial and material disruption of educational processes for the school community.

Users should be expected to be good digital citizens and the environment must support that end. A digital citizenship program can be developed to address appropriate technology behavior, such as using proper user IDs and passwords, changing passwords, logging in and out of the network, and following established standards for devices that can be connected to the network (Hall & Kelly, 2005).

6. How do I know I have created effective policies and plans? Effective policy and planning is the result of good processes. For an AUP and the school's technology plan to be effective, principals must provide vision, context, and sound implementation practices. Nance (2003) reported that principals are involved in technology planning and policy making only at a moderate level. Principals must step up and lead the charge by serving as a member of the technology committee, empowering the committee to design and implement the technology plan, and advocating for and representing the committee at all other levels. Allowing students or teachers to just get by is like handing the keys to your new car to someone you don't know.

7. How do I promote the integration of technology in the classroom? Principals must pay attention to two key constructs: understanding the learners in their schools and setting up conditions for supporting teaching and learning in a technology-rich environment. Three learning styles are widely accepted: sensory-based, which relies on visual and auditory skill; personality-based, which is measured by instruments like the Meyers-Briggs test; and aptitude-based, which relies on determining multiple intelligences. Dede proposed a fourth style: media-based. Although other styles emphasize differences between learners, using media brings students together (Pruitt, 2005).

8. How much will all of this cost and where do I get the funds? As principals strive to strengthen technology

programs, economic conditions and budgetary constraints often make it difficult. To deal with this funding problem, Smith (2005) suggested that principals:

- View technology funding as an ongoing process, not a one-time expenditure
- Develop and use a technology plan as a road map
- Use research and secure funds through external sources to match local funding sources.

Local dollars for funding technology come from local and state taxes, capital outlay budgets, and federal title programs. External sources include competitive grants; partnerships with other schools, businesses, and universities; money from school improvement and reform initiatives; and special project monies from the state education agency. Sometimes a school will receive a gift or donation from a parent, an alumnus, or a business. To seek outside funding:

- Monitor state and federal legislation for grant-funding appropriations
- Have a well-articulated technology plan that is supported by an active technology committee
- Contract with an external grant-writing team or form an internal team for grant writing.

9. How do I work with technology experts? Principals face the tasks of managing and empowering technology experts as well as forming key partnerships with technology vendors and consultants. The principal's role is to ask the right questions and communicate effectively, not to know everything that everyone else knows. Hall (2005) outlined four powerful questions to generate meaningful discussions with technology experts:

- What will success look like?
- How will this affect teaching and learning?
- What if it isn't true? (Challenge every assumption.)
- What is the role of students and teachers?

The job of overseeing the school's technology program has grown exponentially in recent years. Most schools hire a technology coordinator or director to oversee the technology program. What are the essential skills that an effective technology coordinator should exhibit? The Consortium for School Networking (CoSN, 2004) identified the following groups of skills to consider: systems management skills, information management skills, business leadership skills, trainer or training skills, skills related to ethics and policies, and communication skills. Details about each of these skill sets can be found at the CoSN Web site (www.cosn.org).

10. How will I measure success? To determine whether technology has been effective, data must be collected—and not just any data, but data that are related to the goals and objectives of the technology plan. The success of the technology plan should be measured in a formative and a summative manner.

Formative evaluation and assessment will provide ongoing and intermittent feedback to inform the implementation of the technology plan. The technology committee should establish benchmarks, such as implementation dates, confidence ratings, and usage rates. Perception and satisfaction surveys from students, parents, and teachers are also useful. The technology plan should articulate the evaluation process so the technology committee can assess progress and analyze available data. The principal is at the center of data collection and data management because when the principal plays a key role in the assessments, there seems to be higher integrity in the evaluation process.

Summative evaluation and assessments drive the goals and objectives of the future technology plan. Summative data must be collected over several years and from multiple sources. Summative data provide a picture of how technology has affected student learning, school climate, and the teaching process. Standardized test information may serve as one data source in the summative evaluation process. Other sources of summative data include data about the educational technology, such as capacity used, issue tracking, log records or individual user rates, performance and availability rates, and topographies or network maps (Wargo, 2006). All data collection should be done within the goals and objectives of the current technology plan. Decisions about the future are limited by the information used to make them.

A 300% growth rate in thirty years for anything—technology use or car expense—is phenomenal, and it may only suggest the kind of growth in available technologies that will occur in the next decade. The potential to influence the growth and development of each student is in the hands of principals and other educators. But the capacity for affecting the learning culture within the school is not about becoming a technology expert, it is about asking the right questions, exploring the answers to those questions, and creating a road map for the effective use of technology by the students and teachers in your building. Principals, start your engines! The keys to success for technology in your school are in your hands. **PL**

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